other. In the configuration shown in Figure 3, the four support fingers 46 are spaced-apart from each other at substantially the same distance.

032 An enlarged, detailed view of the support finger 46 of the lifter body 42 is shown in Figure 5B. It is seen that the support finger 46 has a tip portion 48 defined by a slanted surface 50 which is slanted from a vertical plane of an outside surface 52 of the support finger 46. The platform 54, when support a wafer 60 thereon, leaves substantially no gap between the slanted surface 50 and an outer periphery 56 of the wafer 60.

033 The support finger 46 can be compared, in contrast, to a conventional support finger 70 shown in Figure 5A. The conventional support finger 70 is equipped with a slanted surface 72, however, intercepted by a vertical surface 74 and thus leaving a gap "A" between the vertical surface 74 and the outer periphery 56 of the wafer 60. The gap "A" shown in Figure 5A is the major contributing factor for wafer shifting during a wafer loading process onto a pedestal leading to deposition and quality problems.

034 Referring now to Figure 5B, a base 58 of the slanted shoulder portion 48, or the tip portion, of the support finger 46 defines a diameter of a circular (not shown) surrounded by the platforms 54 of the at least four support fingers. The circular area formed is not larger than a diameter of the wafer to be carried by the support fingers when measured at room temperature, i.e., at about 23°C. The design is such that when the wafer lifter is used in a fabrication process, the high temperature of the sputter chamber expands the wafer lifter and thus a small gap, such as 0.5 mm, between the wafer and the slanted shoulder portion is provided.

035 The present invention further discloses a method for self-centering a wafer onto a wafer pedestal situated in a physical vapor deposition chamber. The method can be carried out by first providing a wafer lifter as described above, then positioning a wafer on the wafer lifter 40, as shown in Figure 4A, supported by the platform 54 on the tip portion of the support fingers 46. The wafer lifter 40 is then lifted to a position over the pedestal 20 and the wafer is deposited on to the pedestal 20, as shown in Figure 4B. It should be noted that other than the components described above, Figures 4A, 4B and 4C also show a clamp ring 30

which was discussed in Figure 1. Similarly, a chamber shield 34 is also shown in these Figures and was discussed in Figure 1.

036 In the final stage of the process, as shown in a process position in Figure 4C, the wafer pedestal 20 is moved up to the process position, i.e., the edge of the wafer 60 is covered by the clamp ring 30 while the wafer lifter 40 is released from the pedestal 20.

037 The present invention novel apparatus and method for self-centering a wafer onto a wafer pedestal in a physical vapor deposition chamber have therefore been amply described in the above descriptions and in the appended drawings of Figures 3, 4A-4C and 5B.

038 While the present invention has been described in an illustrative manner, it should be understood that the terminology used is intended to be in a nature of words of description rather than of limitation.